



Severe Thunderstorms and Tornadoes

A **severe thunderstorm warning** is issued when a severe thunderstorm has been sighted or meteorologists feel a severe thunderstorm is developing.

A **severe thunderstorm watch** is issued up to 12 hours in advance of possible development of severe thunderstorms. Conditions are favorable for the development of severe thunderstorms, but severe thunderstorms are not certain.

Severe thunderstorms are accompanied by frequent lightning, large hail, potentially damaging winds, and sometimes intense rain. Severe thunderstorms produce hail 1 inch or larger in diameter or winds of at least 58 mph. On occasion, severe thunderstorms can produce very heavy rain over an often small geographic area creating extremely rapid water rises on local drainages.

A **tornado warning** is issued when a tornado has been sighted or meteorologists feel a tornado is developing.

A **tornado watch** is issued up to 12 hours in advance of possible development of tornadic thunderstorms. Conditions are favorable for the development of severe thunderstorms that can produce tornadoes, but tornadoes are not certain.

Tornadoes can produce wind speeds exceeding 200 mph and create devastating damage. Tornadoes can develop very rapidly, sometimes with little warning. If a tornado approaches, seek shelter immediately in a basement or closet near the center of the home away from windows. If caught outdoors, take shelter in a culvert, but be wary of rising water.



Floods and Flash Floods

A **flood warning** is issued when a river is expected to reach flood stage. Flood warnings may be issued hours in advance of the flooding.

A **flood watch** is issued 12-72 hours in advance of an event which makes conditions favorable for flooding, but flooding is not certain.

Flooding results from heavy rains falling over a region for some duration of time sometimes combined with snowmelt. Here are a few important definitions for understanding flood warnings and watches:

Bankfull: Refers to the point at which the river level has reached the top of its bank. For some rivers, this may not be well-defined.

Crest: The point at which the river is at its greatest flow or height.

Flood Stage: Level at which the flooding begins to create damage to property.

Flow: Volume of water flowing in the river, measured in cubic feet per second.

A **flash flood warning** is issued when water very rapidly inundates, or is expected to inundate an area, usually in less than an hour.

A **flash flood watch** is issued up to 12 hours in advance of conditions that will make flash flooding possible, but flash flooding is not certain.

Flash floods often occur with intense thunderstorm rains and/or dam or levee failures.



Winter Storms Snow & Freezing Rain

A **winter storm warning** is issued when heavy snow and/or freezing rain are occurring or are imminent. Winter storm warnings may be issued up to 48 hours in advance of the storm.

A **blizzard warning** is issued when strong winds of 35 mph or greater combine with considerable snow falling and/or blowing snow, dropping visibility to near zero.

A **winter storm watch** is issued 1 to 3 days in advance of an event which makes conditions favorable for the development of heavy snow and/or freezing rain.

Winter storms produce an array of precipitation, including rain, snow, sleet, and freezing rain. Winter storms often drop a foot or more of snow in the higher elevations, with 4 or more inches possible in the lower valleys west of the cascades in less than 12 hours. Very strong winter storms can pile several feet of snow in the Cascades in a day or two.

Sometimes winter storms are accompanied by strong winds creating considerable blowing and drifting of snow. At other times, freezing rain can bring accumulations of an inch or more on objects, snapping trees and power lines and making travel impossible. Cold temperatures and strong winds can combine to create very dangerous life-threatening wind chills.

ROAD CONDITION PHONE NUMBERS:

Most States: 511

Outside Oregon: (503) 588-2941

Outside Washington: (800) 695-7623

Outside Idaho: (888) 432-7623

Outside California: (916) 445-7623

Or find internet links to state DOT websites at:

<http://www.weather.gov/pqr/roads.php>



High Winds

A **high wind warning** is issued when very strong winds are occurring or are likely to occur. A warning could be issued up to 48 hours in advance of the storm.

A **high wind watch** is issued 1 to 3 days in advance of a storm that may produce very intense winds, however high winds are not certain.

Strong storms strike Oregon every winter, but only some of these storms are intense enough to create powerful winds. Often the coast is rocked hardest with sustained winds over 60 mph and gusts over 100 mph. Inland areas are more protected, but strong winds occasionally occur. The western Columbia River Gorge experiences strong east winds every winter.

Here is a comparison of wind speeds (mph) at select locations during some historic storms that struck Oregon:

Location	Columbus Day, 1962	November 13, 1981	December 12, 1995
Astoria	96	58	62
Newport	138	89 ¹	92 ²
No. Bend	81	94	86
Portland	116 ³	71 ¹	74
Salem	90	71	59
Eugene	86	71	49

¹ Last recorded speed before power failure or instrument damage.

² Spotter recorded 107 mph gust on Yaquina Bay Bridge (US 101).

³ Wind speed recorded on Morrison Bridge in downtown Portland.

Warning or Watch? What's the difference?

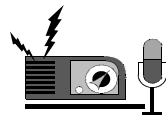
A **WATCH** means that conditions are favorable for the development of hazardous weather.

In other words, the risk for dangerous weather has increased significantly, but its location, and/or timing are still uncertain. Due to this uncertainty, watches cover general areas. A watch may be upgraded to a warning, or an advisory, or it may be canceled.

A **WARNING** means that hazardous weather is occurring, or is imminent, or has a very high probability of occurrence. Warnings

are issued for weather conditions that pose a threat to life and property. Warnings can either be extended in time or area coverage, or be canceled.

An **ADVISORY** is issued for less serious weather conditions that cause inconvenience, but life and property can be threatened unless caution is exercised.



Sources for Weather Forecasts & Warnings

NOAA Weather Radio: This is a special radio broadcast providing weather forecasts and warnings 24 hours per day. Certain receivers have an alarm alert feature that is activated when a warning is broadcast and life or property is immediately threatened.

Portland NWS Internet Page: Contains weather forecasts, warnings, and other information. www.weather.gov/portland

Local Radio and Television Stations: Local media provides NWS weather forecasts and will normally broadcast all NWS weather warnings that affect their broadcast area.

An Informational Guide to National Weather Service Watches and Warnings



SEVERE WEATHER:

Watch or Warning?

U.S. Department of Commerce
National Oceanic and Atmospheric Administration

National Weather Service
5241 NE 122nd Avenue
Portland, OR 97230-1089
(503) 326-2340

www.weather.gov/portland